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PTO/SB/21 (08-00)
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10/618.282 **Application Number** TRANSMITTAL July 9, 2003 **Filing Date FORM First Named Inventor** Sorrells, Martin (to be used for all correspondence after initial filing) Group Art Unit **Examiner Name** Total Number of Pages in This Submission 12+ Attorney Docket Number AES 03-002 **ENCLOSURES** (check all that apply) After Allowance Communication Assignment Papers Fee Transmittal Form (for an Application) to Group Appeal Communication to Board Fee Attached Drawing(s) of Appeals and Interferences Appeal Communication to Group Licensing-related Papers Amendment / Reply (Appeal Notice, Brief, Reply Brief) Petition After Final Proprietary Information Petition to Convert to a Affidavits/declaration(s) Provisional Application Status Letter Power of Attorney, Revocation Change of Correspondence Address Other Enclosure(s) (please Extension of Time Request identify below): Copy of 7 US Patents Terminal Disclaimer Copy of 3 Foreign Patents Express Abandonment Request Request for Refund Copy of 89 Technical Papers, articles and tutorials Information Disclosure Statement CD, Number of CD(s) Certified Copy of Priority Document(s) Remarks Our self-addressed stamped postcard which we Response to Missing Parts/ would appreciate your date stamping and returning Incomplete Application to us upon receipt. Response to Missing Parts under 37 CFR 1.52 or 1.53 SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT Firm PD Holdings (USA), Inc. Patrick H. McCollum Individual name Signature red 71 m Colle Date CERTIFICATE OF MAILING I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231 on this date:

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Date

Carrie Baehler

Typed or printed name

Signature



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Martin Sorrells

U.S. APPLICATION NUMBER: 10/618,282

U.S. FILING DATE: July 9, 2003

ATTORNEY DOCKET NO: AES 03-002

TITLE OF THE INVENTION: Compensation Ensemble Crystal Oscillator for Use

in a Well Borehole System

GROUP ART UNIT

Assistant Commissioner for Patents Mail Stop DD; P.O. Box 1450 Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Dear Sirs:

In accordance with §§ 1.56, 1.97 and 1.98 of Title 37 of the Code of Federal Regulations and pursuant to Applicant's duty of candor and good faith toward the United States Patent and Trademark Office, applicant discloses the following information items which constitute the most relevant information items of which persons substantively involved in the present application are aware. Pursuant to 37 CFR § 1.97(h) the information disclosed shall not be construed to be an admission of materiality to patentability.

Seven (7) U.S. Patents, three (3) Foreign Patents and eighty-nine (89) technical papers, articles and tutorials that relate to this invention are listed on the enclosed PTO/SB/08A and copies of these items are enclosed pursuant to § 1.98.

Respectively Submitted,

Patrick H. McCollum

Registration No. 29,410

363 N. Sam Houston Parkway East

Patrus H Myolla

Suite 1700

Houston, TX 77060

281-260-5616 Telephone

281-260-5670 Facsimile

Attorney for Applicant

Substitut	te for form 1449A/PT	0		C mplet if Kn wn			
11150	DIATION	-		Application Number	10/618,269		
			SCLOSURE	Filing Date	July 9, 2003		
STA	TEMENT B	YA	APPLICANT	First Named Inventor	Sorrells, Martin		
				Art Unit			
	(use as many shee	ets as	s necessary)	Examiner Name			
Sheet	01	of	10	Attorney Docket Number	AES 03-002		

			U.S. PATE	ENT DOCUMENTS	
Examiner Initials*			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		us-5,555,220	09-10-1996	Minto, James	
		us-5,585,556	12-17-1996	Petersen, et al.	
		us-5,842,149	11-24-1998	Harrell et al.	
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		us-6,308,137B1	10-23-2001	Underhill et al.	
		us-6,382,332B1	05-07-2002	Eaton, Michael	
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		FORE	IGN PATENT D	OCUMENTS		
Examiner Initials	Cite No.1	Foreign Patent Document Country Code 3 - Number 4 - Kind Code 5 (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	Т6
		EP0716319A2	06-12-1996	Petersen & Heggerne	S	
		EP1002934A2	05-24-2000	Eaton, Michael		
		WO98/17894	04-30-1998	MacDonald et al.		
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Signature	Considered	



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1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

Substitute fo	FORMATION DISCLOSURE Complete if Known				
		\.	OL COURT	Application Number	10/618,282
INFOR	KIMATION L	JIS	CLOSURE	Filing Date	July 9, 2003
STATI	EMENT RY	' Δ	PPLICANT	First Named Inventor	Sorrells, Martin
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	(use as many shee	ets a	s necessary)	Examiner Name	
Sheet	02	of	10	Attorney Docket Number	AES 03-002

Examiner Initials	Cite No. 1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Т
		Raymond L. Filler, The Acceleration Sensitivity of quartz Crystal Oscillators: A Review IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Vol 35, No. 3, May 1988 R.C. Smythe, Acceleration Effects in Crystal Filters: A Tutorial IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control Vol 39, No. 3, May 1992	
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		Colin K. Campbell, Applications of Surface Acoustic and Shallow Bulk Acoustic Wave Devices, Proceedings of the IEEE, Vol. 77, No. 10, October 1989	

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Signature	 Considered	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.



Substitute for form 1449B/PTO		Complet if Known			
			01 001105	Application Number	10/618,282
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Filing Date	July 9, 2003
				First Named Inventor	Sorrells, Martin
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Sheet	03	of	10	Attorney Docket Number	AES 03-002

	ĭ	OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS	_
Examiner Initials	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue pumber(s), publisher, city and/or country where published	T ²
		George Kamas and Sandra Howe, Coordinated Universal Time (UTC) and Leap Second Time and Frequency Users Manual, NBS Special Publication 559, Chapter 2, Section 2.1, November 1979 (updated May 1997)	
		W. J. Riley, The Calculation of Time Domain Fequency Stability - a revised version of these 2 papers: A Test Suite for the Calculation of Time Domain Frequency Stability, Proc. 1995 IEEE Freq. Contrl. Symp., pp. 360-366, June 1995 and Addendum to a Test Suite for the Calculation of Time Domain Frequency Stability, Proc. 1996 IEEE Freq. Contrl. Symp., pp. 880-882, June 1996.	
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		Leonard S. Cutler; Passive Atomic Frequency Standards: A Tutorial 2002 IEEE International Frequency Control Symposium Tutorials, New Orleans, June 1, 2002.	

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Substitute f	or form 1449B/PTO			Compl t if Kn wn		
			01 001105	Application Number	10/618,282	
INFOR	KMATION L	JIS	CLOSURE	Filing Date	July 9, 2003	
STATEMENT BY APPLICANT				First Named Inventor	Sorrells, Martin	
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Sheet	04	of	10	Attorney Docket Number	AES 03-002	

		OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS	
Examiner nitials	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	Т
		W. J. Riley; Rubidium Frequency Standard Technology: A Tutorial PTTI 2002 Tutorial, Reston, VA December 2, 2002	
		Lute Maleki; Advanced Atomic Clocks; A Tutorial 2000 IEEE International Frequency Control Symposium Tutorials, Kansas City June 6, 2000	
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		Samuel R. Stein; Digital Measurement of Precision Oscillators; A Tutorial IEEE, Frequency Control Reference and Tutorial Information website	
		D.A. Howe, D.W. Allan, and J.A. Barnes; Properties of Oscillator Signals and Measurement Methods; A Tutorial. IEEE, Frequency Control Reference and Tutorial Information website.	
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		Dan Russell; Acoustics and Vibration Animations; A Tutorial IEEE, Frequency Control Reference and Tutorial Information website	
		Time and Frequency Division 847, National Institute of Standards and Technology; IEEE, Frequency Control Reference and Tutorial Information website	
		Arthur Ballato; Transmission-Line Analogs for Piezoelectric Layered Structures: A Ph.D. Dissertations; IEEE, Frequency Control Reference and Tutorial Information website	
		Angela M. Slocum; Basic Oscillators 101 - A Guide to Specifying Timing Devices: A Tutorial. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
		Mike F. Wacker; Frequency Stability Characterization in the Time Domain: A Tutorial Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
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		David R. Shaner; Precision Frequency Measurment: A Tutorial Corning Frequency Control January 5, 1998: IEEE, Frequency Control Reference and Tutorial Information website	

Examiner	Date
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Complet if Known Substitute for form 1449B/PTO 10/618,282 **Application Number** INFORMATION DISCLOSURE July 9, 2003 Filing Date Sorrells, Martin STATEMENT BY APPLICANT First Named Inventor Group Art Unit (use as many sheets as necessary) **Examiner Name** Attorney Docket Number AES 03-002 of Sheet

		OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS	
Examiner Initials	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
	ı	Dan Nehring; Specifying OCXOs for Base Stations; A Tutorial Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
		William P. Hanson and Timothy E Wickard; Acceleration Sensitivity as a Function of Temperature: A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
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Examiner	Cite	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue	Т
nitials*	No.1	N. Bates and G. Weaver; Phase Noise Frequency Distributions of SC and AT Quartz Crystal Resonators. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website G. Kurzenknabe; Practical Considerations in Specifications of High Stability Crystal Oscillators. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website W. Hanson; Proble Ion Signature in Quartz Electrodiffusion Data. A Technical Paper. Corning Frequency Control Reference and Tutorial Information website B. Long; Quartz Crystals and Oscillators. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website B. Long and G. Weaver; Quartz Crystal Oscillators with Direct Resonator Heating. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website L. Heishman, A Review of Progress Related to Doubly Rotated Crystals. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website R. Zeigler, Jr.; Statistical Analysis of Allan Variance, Aging, Phase Noise, and Gravitational Sensitivity of Quartz Crystal Frequency Standards. A Technical Paper. Corning Frequency Control: IEEE, Frequenc	
		G. Kurzenknabe; Vibrational Sensitivity and Phase Noise in Crystal Oscillators. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website V. Bottom; A History of the Quartz Crystal Industry in the USA. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website D. Chandler; A Statistical Analysis of Temperature Dependent Time Domain Phase Jitter. (MC061A1 series Bulk Acoustic Wave Quartz Crystal Oscillators). A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website C. Jensik, R. Zellers & R. Lackey; A Synopsis of Quality Involvement/Improvement Programs and the Ramifications on our Industry. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	

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Examiner nitials	Cite No.1	item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue	1
itials	No.¹	P. Brown; The Influence of Amateur Radio on the Development of the Commercial Market for Quartz Piezoelectric Resonators in the United States. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website H. Fanus; The Quartz Crystal Industry in Carlisle, PA. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website I. Albright; The Effect of Temperature on Crystal Oscillators. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website Branching out Through Band Width; Specialists in Successful Risk Analysis; and Promising Developments from a 'Virtual Drug Company'. Oak Industries Inc. featured on 'Business Now' at 9 AM Sunday, September 12, on WCVB-TV (www.batv.com). A Brief History of Corning Frequency Control. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website	
		McCoy Electronics Photographs fromt he OFC Archives. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website McCoy Electronics Crystal Booklet (circa 1964) from the OFC Archives. A Technical Paper. Corning Frequency Control: IEEE, Frequency Control Reference and Tutorial Information website S. Cantor, A. Stern & B. Levy; Clock Technology. A Technical Paper. IEEE, Frequency Control Reference and Tutorial Information website Manish Vaish, A High Precision Quartz Oscillator with Performance Comparable to	
		Rubidium Oscillators in Many Respects. A Technical Paper. 1996 IEEE Frequency Control Symposium Proceedings. John R. Vig; Quartz Crystal Resonators and Oscillators for Frequency Control and Timing Applications. A Tutorial. US Army Communications - Electronics Command, AMSEL-RD-C2-PT. January, 2001. Approved for public release. Distribution is unlimited. John R. Vig; Quartz Crystal Resonators and Oscillators for Frequency Control and Timing Applications. Product Catalog and Reference Materials. US Army Communications - Electronics Command. January, 2001. Approved for public release. Distribution is unlimited.	

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		I. Abramzom & R. Boroditsky; Thermodynamic Aspect of Short-Term Frequency Stability of Directly Heated Resonators. A Technical Paper. Valpey Fisher Corporation. Resource Center website.	
		C. Serant; Celestica Net Income Soars 110%. Industrial Article from Daily News Digest. Valpey Fisher Corporation. Resource Center website.	
		C. Souza; Chip Industry Still Expecting Growth in 2001. Industrial Article from Electronic Buyers' News. Valpey Fisher Corporation. Resource Center website.	
		Reuters; Conexant to Supply Motorola Broadband Unit. Industrial Article from Daily New Digest. Valpey Fisher Corporation. Resource Center website.	
		C. Souza; Component Avalanch Buries Suppliers. Industrial Article from Daily News Digest. Valpey Fisher Corporation. Resource Center website.	
		R. Shim; Bluetooth Bite Blunted by MS Pullout. Industrial Article ZD Net News. Technology Summit October 8-9, 2003 Bloomberg Auditorium, London. Valpey Fisher Corporation website. Absolute Pull Range Note. Valpey Fisher Corporation website.	
		Training Session - Electronics Applications of Quartz Xtal Oscillators. A Power Point presentation. Valpey Fisher Corporation. Resource Center website.	
		Training Session - Crystal Environmental Specifications. A Power Point presentation. Valpey Fisher Corporation. Resource Center website.	
		Training Session - Crystal Specifications. A Power Point presentation. Valpey Fisher Corporation. Resource Center website.	
		Training Session - Frequency Tolerance. A Power Point presentation. Valpey Fisher Corporation. Resource Center website.	

Examiner	Date
Signature	Considered

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.



Substitute f	for form 1449B/PTO			Compl t if Known			
			01 001105	Application Number	10/618,282		
INFOR	KMATION L) 5	CLOSURE	Filing Date	July 9, 2003		
STAT	EMENT RY	' Δ	PPLICANT	First Named Inventor	Sorrells, Martin		
UIAI		_	LIOAN	Group Art Unit			
	(use as many shee	ets as	necessary)	Examiner Name			
Sheet	10	of	10	Attorney Docket Number	AES 03-002		

Examiner Initials	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T
		Training Session - Quartz Crystal Work, An Intuitive Approach Part I and Part II. A Power Point presentation. Valpey Fisher Corporation. Resource Center website.	
		Seriers QR High Precision Timebase/Reference Crystals and QT High Precision Temperature Sensor Crystals. A technical Paper; Quartzdyne Inc.,Quartzdyne, Inc. information website	•

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Signature	Considered	



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